

We claim:

- 5 1. The DNA sequence SEQ ID NO:1 and DNA sequences hybridizing therewith, encoding an HPPD.
2. An expression cassette comprising a promoter and a DNA sequence as claimed in claim 1.
- 10 3. An expression cassette as claimed in claim 2, comprising the CaMV 35S promoter.
4. An expression cassette as claimed in claim 2, comprising the seed-specific phaseolin promoter.
- 15 5. An expression cassette as claimed in claim 2, the DNA sequence as claimed in claim 1 being functionally linked to another protein in such a way that a joint translation product is formed.
- 20 6. The use of the expression cassette as claimed in claim 2 for transforming plants.
- 25 7. A method of transforming a plant, which comprises introducing an expression cassette as claimed in claim 2 into a plant cell, into callus tissue, into an entire plant or into plant cell protoplasts.
- 30 8. A method of transforming plants, which comprises
 - 1) transferring the expression cassette as claimed in claim 2 into an agrobacterial strain,
 - 2) isolating the recombinant clones formed, and
 - 3) using the latter for transforming plants.
- 35 9. A method as claimed in claim 8, the transformation being accomplished with the aid of the strain *Agrobacterium tumefaciens*.
- 40 10. A method of transforming plants as claimed in claim 7, wherein the transformation is accomplished with the aid of electroporation.
- 45 11. A method of transforming plants as claimed in claim 7, wherein the transformation is accomplished with the aid of the particle bombardment method.

a 12. A plant with an elevated vitamin E content, comprising an expression cassette as claimed ~~in any one of claims 2 to 5.~~ *Claim 2*

5 13. A plant as claimed in claim 12, selected from the group consisting of soya, barley, oats, wheat, oilseed rape, maize or sunflowers.

10 14. A method of generating plants with an elevated vitamin E content, which comprises expressing, in plants, a DNA sequence as claimed in claim 1.

15. A method as claimed in claim 14, wherein the DNA sequence is expressed in a tobacco plant.

a 15 16. A method as claimed in ~~any of claims 14 and 15,~~ *Claim 14* wherein expression takes place in the leaves or the seeds of the plant.

20 17. ~~The use of an expression cassette as claimed in any of claims 2 to 5 for generating plants with an elevated vitamin E content by means of expressing, in plants, a DNA sequence as claimed in claim 1.~~

25 18. The use of the expression cassette as claimed in claim 2 for generating a test system for identifying HPPD inhibitors.

30 19. A test system based on the expression of an expression cassette as claimed in claim 2 for identifying HPPD inhibitors.

20. A herbicidally active substance which can be identified by means of a test system as claimed in claim 19.

35 21. The use of a plant as claimed in claim 12 for generating plant HPPD.

AI 40 22. ~~The use of the expression cassette as claimed in claim 2 for generating plants with elevated resistance to HPPD inhibitors by means of higher expression of a DNA sequence as claimed in claim 1.~~

45 23. A method of generating plants with elevated resistance to HPPD inhibitors by means of higher expression of a DNA sequence as claimed in claim 1.

35

24. A plant with elevated resistance to HPPD inhibitors, *claim 2*
comprising an expression cassette as claimed in ~~any of claims~~
~~2 to 5.~~

5

10

15

20

25

30

35

40

45

DNA sequence encoding a hydroxyphenylpyruvate dioxygenase gene
and its overproduction in plants

5 Abstract

A method is described of generating plants with elevated vitamin E
biosynthesis performance by overexpressing a plant HPPD gene from
barley.

10

15

20

25

30

35

40

45